

Module Code:	AUR536
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Module Title:	Construction Technology 2
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Level:	5	Credit Value:	20
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Cost Centre(s):	GABE	<u>JACS3</u> code:	K190 (ADT) K220 (CM)
		<u>HECoS</u> code:	100122 (ADT) 100149 (CM)

Faculty	FAST	Module Leader:	Dr Gareth Carr
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Scheduled learning and teaching hours	30 hrs
Guided independent study	170 hrs
Placement	0 hrs
Module duration (total hours)	200 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
BSc (Hons) Architectural Design Technology	✓	<input type="checkbox"/>
BSc (Hons) Construction Management	✓	<input type="checkbox"/>

Pre-requisites

Office use only

Initial approval: 29/08/2019

Version no: 1

With effect from: 01/09/2019

Date and details of revision:

Version no:

Module Aims

The module aims to demonstrate the technologies that are available in the provision of commercial and industrial buildings, multi-occupation residential structures and associated services and infrastructure.

The module will consider the various materials and techniques that are employed in the design and construction of foundations and basements, principal superstructures, enclosures, building services provision and fitting-out for use.

Intended Learning Outcomes

Key skills for employability

- KS1 Written, oral and media communication skills
- KS2 Leadership, team working and networking skills
- KS3 Opportunity, creativity and problem solving skills
- KS4 Information technology skills and digital literacy
- KS5 Information management skills
- KS6 Research skills
- KS7 Intercultural and sustainability skills
- KS8 Career management skills
- KS9 Learning to learn (managing personal and professional development, self-management)
- KS10 Numeracy

At the end of this module, students will be able to

Key Skills

1	Analyse the performance requirements of complex framed, panelled and other non-traditional building types.	KS1	KS5
2	Select and justify sustainable alternative options for the construction of primary and secondary building elements (including buildings with basements), to take account of on- and off-site manufacturing technologies.	KS1	KS3
		KS7	
3	Undertake design option appraisal to ensure adherence to current building legislation including the conservation of energy, reduction of carbon emissions, inclusion, accessibility, security and structural performance.	KS1	KS3
		KS6	
4	Recognise and appreciate the function and design of complex building services towards human comfort and convenience, including those where the whole building operates as a building services system.	KS1	KS6
5	Discuss the options for the refurbishment, adaptation, upgrade and/or change in use of complex buildings, with particular emphasis upon 'low energy' and 'passive' technologies towards the provision of 'healthy' environments.	KS3	KS6

Transferable skills and other attributes

- Students will transfer their understanding of construction technology to those other subjects that relate to the content of this module;
- Students will understand the importance of human comfort and experience in the environments they examine.

Derogations

None

Assessment:

Indicative Assessment Tasks:

Assessment will be undertaken in the form of an in-class test and a case-study analysis, both of 50% weighting. The test will measure understanding of those technologies and processes associated with complex contemporary commercial/industrial construction, and the case study will consider levels of building performance demanded by contemporary legislative requirements and innovative 'good-practise'.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration or Word count (or equivalent if appropriate)
1	1 & 2	In-class test	50%	2 hrs.
2	3, 4 & 5	Case Study	50%	2,000 words

Learning and Teaching Strategies:

This module will provide opportunities for didactic delivery of technical content in the categorisation, analysis and application of technologies in the design and execution of complex buildings and associated infrastructure.

Formal lectures will describe technologies appropriate to various sets of performance criteria for a range of complex buildings and projects and will explain construction sequence in the context of the structural building types considered. Particular emphasis will be given to the use of case-studies, cross-section drawings, material samples and site-visits in communicating technical detail.

Site visits should also form part of the student experience in this regard, should such opportunities present themselves as part of the general delivery of the curriculum.

Syllabus outline:

The sustainable design, construction and maintenance of commercial, industrial and multi-occupation residential buildings to include;

- the performance requirements of complex framed, panelled and other non-traditional building types.
- current building legislation including the conservation of energy, reduction of carbon emissions, inclusion, accessibility, security and structural performance.
- the design and specification of sub-structure, superstructure and the 'external envelope' (including buildings with basements);
- 'buildability' and the construction process, including health and safety considerations. design-life and the deconstruction of complex buildings;
- the refurbishment, adaptation, upgrade and/or change in use of complex buildings,

The design, installation and maintenance of sustainable mechanical and electrical services in commercial, industrial and multi-occupation residential buildings and projects, to include;

- supply, disposal, alarm and emergency systems;
- space heating, ventilation and air conditioning systems;
- mechanical conveyance systems, including lifts and escalators.

Indicative Bibliography:**Essential reading**

Greeno R., Chudley, R. (2016), *Building Construction Handbook. 10th ed.* Abingdon: Taylor and Francis Inc.

Hall, F. and Greeno, R. (2017), *Building Services Handbook. 9th ed.* London: Routledge.

Other indicative reading

Bryan, T. (2010), *Construction Technology: Analysis and Choice. 2nd Ed.*, Chichester: John Wiley and Sons.

Ching, F. D. K., Onouye, B. & Zuberbuhler, D., (2014), *Building Structures Illustrated. 2nd Ed.* New Jersey: John Wiley and Sons.

Chudley, R. et al. (2012), *Advanced Construction Technology. 5th Ed.* Harlow: Pearson Education Limited.

Clements-Croome, D (Ed.) (2014), *Intelligent Buildings: An introduction.*, Abingdon: Routledge

Emmitt, S. (2018), *Barry's Advanced Construction of Buildings. 4th ed.* Chichester: Wiley-Blackwell.

Fleming, E. (2005), *Construction Technology: An Illustrated Introduction.* Oxford: Blackwell.

Foster, J. S., Harrington, R. & Greeno, R., (2007), *Structure & Fabric: Part 2. 7th ed.* New Jersey: Prentice Hall.

Buxton, P. (2018), *Metric Handbook: Planning and Design Data*. 6th ed. London: Routledge.

Riley, M & Cotgrave, A. (2014), *Construction Technology 2: Industrial and Commercial Building*. 3rd Ed., Basingstoke: Macmillan.

Building Research Establishment Digests HMSO, London

The Building Regulations HMSO, London

Building Design www.bdonline.co.uk

The Institution of Structural Engineers www.istructe.org.uk

The Chartered Institution of Highways & Transportation www.ciht.org.uk

Chartered Institute of Architectural Technologists www.ciat.org.uk

Chartered Institute of Building www.ciob.org.uk

Institute for Civil Engineering www.ice.org.uk

Royal Institute of British Architects www.architecture.com

Designing Buildings Wiki www.designingbuildings.co.uk

Other sources:

IHS Database www.ihsti.com

